

In the Claims:

- 1-16. Cancelled.
17. (Original) A pixel comprising:
a light emitting diode (LED) that emits in the blue region of the visible spectrum;
a light emitting diode that emits in the green region of the visible spectrum and
adjacent said blue LED;
said blue LED and said green LED having their respective top contacts in
substantially the same plane; and
a light emitting diode that emits in the red region of the visible spectrum, and adjacent
to said blue LED and said green LED, said red LED including at least one active layer of
aluminum gallium arsenide (AlGaAs), and said red LED having its respective top anode
contact in substantially the same plane as said anode contacts of said blue LED and said
green LED.
18. (Original) A pixel according to Claim 17 wherein said LEDs comprise
respective bottom contacts, and wherein said bottom contacts are in a substantially common
plane different from said common plane of said top contacts.
19. (Previously Presented) A pixel according to Claim 17 wherein:
said top contacts are the anode contacts;
the cathode of each diode is connected to an individual pin; and
said anode top contacts of each diode are connected to a common anode pin.
20. (Original) A pixel according to Claim 17 wherein said blue LED
comprises a silicon carbide substrate and a group III nitride active layer.
21. (Original) A pixel according to Claim 20 wherein said group III nitride
active layer comprises gallium nitride.
22. (Original) A pixel according to Claim 17 wherein said green LED
comprises a silicon carbide substrate and a group III nitride active layer.

23. (Original) A pixel according to Claim 22 wherein said group III nitride comprises gallium nitride.

24. (Original) A pixel according to Claim 17 wherein said green LED comprises a Group III phosphide active layer.

25. (Original) A pixel according to Claim 24 wherein said Group III phosphide comprises gallium phosphide.

26. (Original) A pixel according to Claim 24 wherein said Group III phosphide comprises aluminum indium gallium phosphide (AlInGaP).

27. (Original) A pixel according to Claim 17 wherein:
said blue LED comprises a silicon carbide substrate and a group III nitride active layer;

 said green LED comprises a silicon carbide substrate and a group III nitride active layer; and

 said blue LED and said green LED having their voltage parameters matched to one another to simplify the driving thereof.

28. (Original) A pixel according to Claim 27 further comprising:
constant current drive means for said LEDs; and
 a resistor in circuit in series between said constant current drive means and the cathode of said red LED to compensate for the differences between the forward voltage characteristics of said red LED and the forward voltage characteristics of said matched blue and green LEDs.

29. (Original) A pixel according to Claim 17 that can form any color on that portion of a CIE curve that falls within a triangle whose sides are formed by a line on the CIE curve between about 430 nm and 660 nm, a line between about 660 nm and a point between 500 and 530 nm, and a line between said 500-530 nm point and about 430 nm.

30. Cancelled.

31. (Previously Presented) A pixel comprising:
a light emitting diode (LED) that emits in the blue region of the visible spectrum;
a light emitting diode that emits in the green region of the visible spectrum and
adjacent said blue LED; and
a light emitting diode that emits in the red region of the visible spectrum, and adjacent
to said blue LED and said green LED;
said blue light emitting diode comprising a silicon carbide substrate and a group III
nitride active layer; and
wherein said red LED, said blue LED and said green LED have their respective top
anode contacts in substantially the same plane.

32. (Original) A pixel according to Claim 31 wherein said LEDs comprise
respective bottom contacts, and wherein said bottom contacts are in a substantially common
plane different from said common plane of said top contacts.

33. (Original) A pixel according to Claim 31 wherein said red LED includes
at least one active layer of aluminum gallium arsenide (AlGaAs).

34. (Original) A pixel according to Claim 31, wherein the cathode of each
diode is connected to an individual pin and the anode top contacts of each diode are
connected to a common anode pin.

35. (Previously Presented) A pixel according to Claim 31 wherein said
group III nitride active layer comprises gallium nitride.

36. (Previously Presented) A pixel according to Claim 31 wherein said
green LED comprises a silicon carbide substrate and a group III nitride active layer.

37. (Original) A pixel according to Claim 36 wherein said group III nitride
comprises gallium nitride.

38. (Previously Presented) A pixel according to Claim 31 wherein said green LED comprises a Group III phosphide active layer.

39. (Previously Presented) A pixel according to Claim 38 wherein said Group III phosphide comprises gallium phosphide.

40. (Original) A pixel according to Claim 38 wherein said Group III phosphide comprises aluminum indium gallium phosphide (AlInGaP).

41. (Previously Presented) A pixel according to Claim 31 wherein: said green LED comprises a silicon carbide substrate and a group III nitride active layer; and

 said blue LED and said green LED having their voltage parameters matched to one another to simplify the driving thereof.

42. (Previously Presented) A pixel comprising:
 a light emitting diode (LED) that emits in the blue region of the visible spectrum, said blue light emitting diode comprising a silicon carbide substrate and a group III nitride active layer;

 a light emitting diode that emits in the green region of the visible spectrum and adjacent said blue LED, said green LED comprising a silicon carbide substrate and a group III nitride active layer;

 a light emitting diode that emits in the red region of the visible spectrum, and adjacent to said blue LED and said green LED;

 said blue LED and said green LED having their voltage parameters matched to one another to simplify the driving thereof;

 constant current drive means for said LEDs; and

 a resistor in circuit between said constant current drive means and the cathode of said red LED to compensate for the differences between the forward voltage characteristics of said red LED and the forward voltage characteristics of said matched blue and green LEDs.

43. (Previously Presented) A pixel according to Claim 31 that can form any color on that portion of a CIE curve that falls within a triangle whose sides are formed by a line on the CIE curve between about 430 nm and 660 nm, a line between about 660 nm and a point between 500 and 530 nm, and a line between said 500-530 nm point and about 430 nm.

44-48. Cancelled.

49. (Original) A thin full color flat panel display module comprising:
a matrix of LED pixels arranged in horizontal and vertical rows on a printed circuit board;
each said pixel comprising four respective quadrants;
a red LED in a first of said quadrants, a green LED in a second of said quadrants, a blue LED in a third of said quadrants, and a common contact pad in the fourth of said quadrants;
said LEDs having the same quadrant relationship to each other within each pixel;
said quadrants being oriented identically in said pixels in each row; and
said quadrants in said pixels in any given row being oriented 90° or 180° opposite said pixels in the adjacent row to thereby position the common contact pad in each pixel in one row adjacent the common contact pads in each pixel in an adjacent row of pixels.

50. (Original) A thin full color flat panel display module according to Claim 49 wherein said pixels are oppositely oriented in alternating horizontal rows.

51. (Original) A thin full color flat panel display module according to Claim 49 wherein said pixels are oppositely oriented in alternating vertical rows.

52. (Original) A thin full color flat panel display module according to Claim 49 wherein said printed circuit board has one common anode via hole for each two pixels, each said common via hole being positioned between two adjacent rows of pixels and between said respective common anode pads of said respective pixels in each of said adjacent rows so that an anode lead from each of said two pixels can pass through said common via hole, thus minimizing the total number of via holes required in said printed circuit board.

53. (Original) A thin full color flat panel display module according to Claim 49 wherein said contact pad comprises an anode pad.

54. Cancelled.

55. (Previously Presented) A pixel comprising:
a light emitting diode (LED) that emits in the blue region of the visible spectrum;
a light emitting diode that emits in the green region of the visible spectrum and adjacent said blue LED;
a light emitting diode that emits in the red region of the visible spectrum, and adjacent to said blue LED and said green LED;
said green light emitting diode comprising a silicon carbide substrate and a group III nitride active layer; and
wherein said red LED, said blue LED and said green LED have their respective top anode contacts in substantially the same plane.

56. (Original) A pixel according to Claim 55 wherein said LEDs comprise respective bottom contacts, and wherein said bottom contacts are in a substantially common plane different from said common plane of said top contacts.

57. (Original) A pixel according to Claim 55 wherein said red LED includes at least one active layer of aluminum gallium arsenide (AlGaAs).

58. (Original) A pixel according to Claim 55, wherein the cathode of each diode is connected to an individual pin and the anode top contacts of each diode are connected to a common anode pin.

59. (Previously Presented) A pixel according to Claim 55 wherein said group III nitride active layer comprises gallium nitride.

60. (Previously Presented) A pixel according to Claim 55 wherein said blue LED comprises a silicon carbide substrate and a group III nitride active layer.

61. (Original) A pixel according to Claim 60 wherein said group III nitride comprises gallium nitride.

62. (Previously Presented) A pixel according to Claim 55 wherein: said blue LED comprises a silicon carbide substrate and a group III nitride active layer; and

 said blue LED and said green LED having their voltage parameters matched to one another to simplify the driving thereof.

63. (Previously Presented) A pixel comprising:
 a light emitting diode (LED) that emits in the blue region of the visible spectrum, said blue LED comprises a silicon carbide substrate and a group III nitride active layer;
 a light emitting diode that emits in the green region of the visible spectrum and adjacent said blue LED, said green light emitting diode comprising a silicon carbide substrate and a group III nitride active layer;
 a light emitting diode that emits in the red region of the visible spectrum, and adjacent to said blue LED and said green LED;
 said blue LED and said green LED having their voltage parameters matched to one another to simplify the driving thereof;
 constant current drive means for said LEDs; and
 a resistor in circuit between said constant current drive means and the cathode of said red LED to compensate for the differences between the forward voltage characteristics of said red LED and the forward voltage characteristics of said matched blue and green LEDs.

64. (Currently Amended) A pixel according to Claim 5455 that can form any color on that portion of a CIE curve that falls within a triangle whose sides are formed by a line on the CIE curve between about 430 nm and 660 nm, a line between about 660 nm and a point between 500 and 530 nm, and a line between said 500-530 nm point and about 430 nm.

In re: Van De Ven et al.

Serial No.: 09/057,838

Filed: April 9, 1998

Page 9 of 11

65.-67. Canceled.